

absence in UK public sector healthcare workers was twice that found in private sector workers. One proposed initiative to address this was to encourage exercise and healthy eating. We aimed to assess and then overcome any potential barriers, then determine the benefits of an exercise at work programme.

METHODS: A questionnaire survey was sent to all members of staff in the Department of Urology at our institution. This explored perceived barriers and benefits of an exercise at work programme. Following this we opened 2 exercise programmes, a walking group at lunchtimes and a Qi Gong/ Tai Chi group (led by a volunteer member of staff with considerable experience of these exercise forms) before morning clinical activity started. Each session lasted approximately 15 minutes. Participation was free of charge and entirely voluntary. After a 6 week trial we sent all participants a further questionnaire to explore the perceived benefits and any disadvantages of the exercise at work programme.

RESULTS: Of 40 employees in the Urology department, 19 (47.5%) volunteered to take part in at least one exercise at work session. Lack of time was the commonest perceived barrier to exercise at work. We assessed perceived benefits both to the individual and to the department. Reported benefits included improved general wellbeing (87.5%), improved relationships/ friendships with colleagues (75%), better working relationships (75%), improved morale (62.5%), less stress (62.5%), more energy (50%), good "publicity" for the department within the hospital (50%), physical health benefits (25%), mental health benefits (25%), improved fitness (25%) and weight loss (12.5%).

CONCLUSIONS: So far as we are aware, this is the only study to date to specifically examine the benefits of an exercise at work programme in a Urology department. Within the limitations of this small study, we have demonstrated that exercise can be successfully incorporated into the workplace, at no additional cost to employee or employer. Better working relationships was the most commonly cited benefit for the department, whilst improved general wellbeing was the most commonly cited personal benefit of the exercise at work programme. We are hopeful that through time the benefits of a happier and healthier workforce will translate into an improved service for our patients.

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SIDEROPHORE VACCINE CONJUGATES PROTECT AGAINST UROPATHOGENIC ESCHERICHIA COLI IN A MURINE MODEL OF URINARY TRACT INFECTION

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INTRODUCTION AND OBJECTIVES: Uropathogenic *Escherichia coli* (UPEC) is the primary etiological agent of uncomplicated urinary tract infections (UTIs). Over half of all women will experience a UTI in their lifetime and one in forty women suffers recurrent UTIs. The repeated administration of antibiotics to treat recurrent UTIs has resulted in a steady increase in antibiotic resistance among UPEC isolates. The objective of this study was to identify novel vaccine strategies for the prevention of UTIs. Bacteria-derived siderophores, which are secreted small molecules used for iron acquisition, were targeted for use in our UTI vaccine. Specifically, the two siderophores aerobactin (Aebt) and yersiniabactin (Ybt) were selected due to their proven role in bacterial virulence, their association with pathogenic *E. coli* strains, their surface exposed nature, and the protection their cognate outer membrane protein receptors provide against experimental UTI.

METHODS: Aebt and Ybt were conjugated to immunogenic cationized bovine serum albumin (cBSA). Mice were intranasally vaccinated with cBSA, cBSA conjugated to Aebt (cBSA-Aebt), cBSA conjugated to Ybt (cBSA-Ybt), or a mixture of the two antigen conjugates. After the initial vaccination, mice were boosted once a week for two weeks. Mice were then intraurethrally challenged with UPEC. Bacterial burdens in the urine, bladder, and kidneys were quantified after 48 hours of infection.

RESULTS: Vaccination with cBSA-Aebt, cBSA-Ybt, or the 1:1 mixture of the two cBSA-conjugates resulted in a ten-fold decrease in bacterial burdens in the urine compared to mice vaccinated with cBSA alone. Mice vaccinated with cBSA-Ybt had a ten-fold decrease in bacterial burden in the kidneys. Combining the two vaccine conjugates resulted in a 100-fold decrease in bacterial burden in the kidneys. Further studies revealed that vaccination with these cBSA-siderophore conjugates stimulates an adaptive immune response that recognizes the bacterial siderophores.

CONCLUSIONS: The data presented here identify the potential use of bacterial siderophores in a UTI vaccine. This is the first evidence that bacteria-specific small molecules can be formulated into a protective vaccine and represent untapped resources as antigens in other bacterial diseases.

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RECOVERY FROM NEUROLOGIC IMPAIRMENT IN MURINE MODEL OF CORONAVIRUS-INDUCED DEMYELINATION DOES NOT DIRECTLY CORRELATE WITH IMPROVEMENT OF NEUROGENIC BLADDER DYSFUNCTION: LONG-TERM FOLLOW UP STUDY

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INTRODUCTION AND OBJECTIVES: Patients with multiple sclerosis (MS) often develop neurogenic lower urinary tract symptoms (LUTS) which occur in 50-90 percentage of these patients. To understand how neurodegenerative changes in the central nervous system (CNS) affect the function of the lower urinary tract, our group previously investigated the correlation between the degree of neurological impairment and development of neurogenic bladder dysfunction in a murine model of MS. Coronavirus-induced encephalomyelitis (CIE) was induced by intracranial injection of mouse hepatitis virus (MHV). CIE mice developed a significant neurologic deficit in the CNS followed by neurologic bladder dysfunction evaluated at 4 weeks post inoculation. In this study, we aimed to perform a long-term follow up study of changes in bladder function in order to understand the effects of chronic demyelination on the LUT.

METHODS: C57BL/6J mice (8 wks old) were inoculated with either PBS (N=9) or a neurotropic strain of MHV (A59 strain, 5000 PFU, N=28) by intracranial injection of viral solution (20 µl). CIE-induced symptoms, mouse weight and voiding behavior were recorded every week up to 8 wks post inoculation. The degree of neurologic impairment was evaluated by the Clinical Symptom Score (CSS), and micturition patterns were determined by filter paper assay.

RESULTS: CIE mice showed most significant weight loss at week 1, and reached the highest CSS at week 2 (average CSS 2.27). Following the recovery from motor neurological impairment, 81 percentage of CIE mice had CSS 0 at 3 wks after inoculation, and 90.5 percentage of CIE mice had CSS 0 at 4 wks after inoculation. Interestingly, 9.52 percentage of CIE mice experienced a relapse of symptoms between 5 and 8 wks after inoculation. Although majority of CIE mice recovered from initial neurological impairment by week 5, voiding frequency of CIE mice recorded at 5 and 6 wks was significantly higher than in the control group. CIE-induced changes in micturition patterns were diminished by week 7 followed by recovery to baseline values at 8 wks after viral inoculation.

CONCLUSIONS: Our study clearly demonstrates prolonged effects of virus-induced neurologic and motor impairment in the CNS on the lower urinary tract function.

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